2. Study Area Description

2.1 History and Land Use

2.1.1 Oakland County

Oakland County was originally purchased from France in 1803 and officially organized in January of 1819. Prior to this, many different Native American tribes, Ojibwa, Chippewa, Ottawa and Potawatomi resided in the area. The first settlement in Oakland County was Pontiac started on the Saginaw Trial by the Pontiac Land Company. In 1820 Governor Lewis Cass set it as the County seat. Agriculture was productive and Oakland County often lead the state in the production of meat and grain. As roads and rails were built, the county did much trade with the lumber areas to the north.

Eventually, the agricultural focus of Oakland County came to be over-shadowed by its industrial and residential growth. Pontiac became a leading auto producing city and the southern part of the county developed a widely diversified industrial economy. North and west Oakland County features rural areas and historic towns such as Clarkston, Davisburg and Milford. Land use in this area of the county is predominately single-family residential with lot sizes ranging from one to 2.4 acres in the east, 2.5 to 4.9 acres in the central to up to 10 acres or greater in the west. Zoning for commercial/office and industrial/ research is much more prevalent in southern Oakland County. Commercial and industrial zoning on M-15 is located around Ortonville and the southern corridor boundary. Northern Oakland County along M-15 is not served by sewers, which limits the density of development.

Oakland County has Michigan's second largest population. Nevertheless, numerous state recreational areas, state parks and lakes dot the area.

2.1.2 Genesee County

Genesee County was named for a county in New York state meaning 'beautiful valley.' In 1829, the federal government started construction of a military road connecting Detroit to Saginaw Bay. The location of the wooden bridge across the Flint River became the site of Flint.

Genesee County grew rapidly thanks to the sawmills that developed on the Thread River in the 1830s. Lumber quickly became the driving economic force. When lumbering declined, the manufacture of carriages quickly became the dominant industry. The Durant-Dort Company was producing up to 50,000 annually. In the early 1900s, as the automobile began to supplant the carriage, the Durant-Dort Company invested in the Buick Motor Company, which had moved from Detroit to Flint in 1903. Today Genesee is Michigan's fifth most populous county and Flint is the state's third largest city.

Land use in Genesee County along M-15 is mostly residential, ranging from suburban to urban. Commercial zoning is located at the northern boundary of the corridor and in the Village of Goodrich along M-15. Within one mile of M-15 there is also land zoned for recreational/conservation and residential/agricultural uses. Many wetlands and small lakes also lie in the corridor.

2.2 Demographics

This section covers population and population trends, the number of households and persons per household, employment and retail sales. A number of sources have been used. Where data are available from Oakland and Genesee Counties they are cited. Where state data are available from the State Demographer, they are used. Where data are not available from these sources, Woods & Poole Economics, Inc. is the source. Woods & Poole Economics, Inc. is a nationally-recognized independent firm that specializes in long-term county economic and demographic projections. Their projections are updated annually and include socioeconomic factors that are not typically generated at the state or local level.

2.2.1 Population

Tables 2-1 and 2-2 present population trends and projections for the two counties touching M-15 in the study area. Genesee County's population is expected to increase over the period 2000 to 2020 by 4,413 people (1%). Oakland County projects an increase of 14 percent over that period. This compares with Michigan's population growth forecast of about 7 percent and a U.S. growth of almost 18 percent.

2.2.2 Age

The percent of the population that is elderly is expected to rise in each county (Table 2-2). The percentage of elderly is expected to grow from approximately 11 percent in 2000 to about 16 percent in 2020. The data are consistent with state and national trends.

Table 2-1

Population Estimates and Projections from Woods & Poole Economics, Inc.

Area	1970	1980	1990	2000	2005	2010	2015	2020
Genesee	446,094	449,106	431,022	436,446	437,726	439,719	442,671	445,888
Oakland	909,396	1,010,386	1,086,538	1,199,918	1,254,171	1,310,217	1,369,282	1,429,230
Michigan	8,899,065	9,256,635	9,310,470	9,932,684	10,185,091	10,452,529	10,743,519	11,040,321
U.S.	203,982,313	227,225,622	249,440,652	274,676,222	286,034,283	297,783,320	310,192,792	322,771,740

Source: Genesee County data from Draft Genesee County Long Range Transportation Plan.
Oakland County data from 2020 Regional Development Forecast, SEMCOG, June 1996.
Michigan data from Office of State Demographer, January 1996.
U.S. data from Woods & Poole Economics, Inc.

Table 2-2

Percent of Population Over Age 64

Area	1970	1980	1990	2000	2005	2010	2015	2020
Genesee	6.53	8.01	10.16	10.57	10.83	11.81	13.63	15.91
Oakland	6.66	8.93	10.88	11.22	11.36	12.10	13.65	15.81
Michigan	8.47	9.90	11.92	12.37	12.49	13.25	14.90	17.14
U.S.	9.85	11.31	12.52	12.64	12.67	13.28	14.77	16.60

Source: Woods & Poole Economics, Inc.

2.2.3 Households

The number of households is expected to increase over the next 20 years in both counties (Table 2-3). While Oakland County is expected to see a 20-year growth of almost 20 percent in households, the low level of population growth in Genesee County has a direct bearing on the minimal increase in the expected number of households. Some growth in the number of households in the past can be attributed to a declining number of persons per household (Table 2-4). This trend is expected to level off. The state and national trend of about 2.6 persons per household is anticipated in Genesee County with Oakland County dropping to about 2.4 persons by 2020.

Table 2-3

Number of Households

Area	1970	1980	1990	2000	2005	2010	2015	2020
Genesee	131,005	154,760	161,686	164,108	165,773	167,098	167,790	167,307
Oakland	266,529	355,461	410,520	461,758	483,455	506,260	530,457	551,773
Michigan	2,675,379	3,197,677	3,427,602	3,665,645	3,783,851	3,895,047	3,991,669	4,058,567
U.S.	63,983,517	80,824,792	92,254,466	102,960,189	108,274,705	113,425,142	118,176,438	122,042,470

Source:s: Genesee County data from Woods & Poole Economics, Inc.
Oakland County data from 2020 Regional Development Forecast, SEMCOG, June, 1996.
State and U.S. Data from Woods & Poole Economics, Inc.

Table 2-4

Persons Per Household

Area	1970	1980	1990	2000	2005	2010	2015	2020
Genesee	3.37	2.88	2.64	2.63	2.61	2.60	2.61	2.63
Oakland	3.37	2.81	2.61	2.59	2.55	2.49	2.47	2.44
Michigan	3.24	2.83	2.65	2.65	2.63	2.62	2.63	2.65
U.S.	3.08	2.74	2.63	2.60	2.57	2.55	2.55	2.57

Source:s: Genesee County data from Woods & Poole Economics, Inc.
Oakland County data from 2020 Regional Development Forecast, SEMCOG, June, 1996.
State and U.S. Data from Woods & Poole Economics, Inc.

While these countywide trends provide some background, building permit activity can also be used as a means of assessing growth in an area (Table 2-5). Building permits for the townships and villages in the M-15 corridor study area show significant growth. For the first eight months of 1999, 529 building permits representing 546 dwelling units were issued.

Table 2-5
Reported Year-to-Date Building Permits / August 1999

Area	Buildings	Units
Genesee		
Atlas Township	42	42
Davison Township	91	108
Village of Goodrich	17	17
Oakland		
Groveland Township	26	26
Brandon Township	95	95
Independence Township	256	256
Village of Ortonville	2	2
Control Total	529	546

Source: Michigan Information Center

2.2.4 Employment

A review of 1997 employment data (Table 2-6) shows that the largest concentration of employees in Genesee and Oakland Counties works in the services industry. The retail trade industry also employs a significant number of people in both counties, as does the manufacturing industry.

Table 2-6
Employment Profile in 1997

	Genesee		Oakland	
Industry	No.	Percent	No.	Percent
Agriculture/Forestry/Fishing	723	0.47	3,997	0.56
Mining	8	0.01	20	0.00
Construction	6,789	4.41	29,932	4.17
Manufacturing	37,019	24.03	121,601	16.93
Transportation/Utilities	3,932	2.55	20,183	2.81
Wholesale Trade	6,818	4.42	51,623	7.19
Retail Trade	38,601	25.05	133,389	18.57
Financial/Insurance/Real Estate	5,873	3.81	68,142	9.49
Services	51,563	33.46	288,783	40.21
Unclassified Establishments	2,756	1.79	527	0.07
Totals	**154,082**	**100.00**	**718,197**	**100.00**

Source: County Business Patterns, 1997

Major employers by county are shown in Table 2-7. They are primarily located in Flint, Pontiac, and Auburn Hills. Most of the major employers are in or related to the automobile manufacturing industry. None are in the M-15 corridor.

Table 2-7

Major Employers 1998

Employer	City	County	Employees
Cadillac Products Inc	Troy	Oakland	1,000
Fanuc Robotics North America	Rochester Hills	Oakland	1,000
Meritor Automotive Inc	Troy	Oakland	1,000
General Motors Corp/Powertrain	Flint	Genesee	1,100
General Motors Corp	Troy	Oakland	1,200
Jabil Circuit Inc	Auburn Hills	Oakland	1,200
United States Postal Service	Flint	Genesee	1,200
ITT Automotive Inc	Auburn Hills	Oakland	1,500
Delphi/Flint West	Flint	Genesee	1,560
General Motors Corp/Powertrain	Flint	Genesee	1,975
General Motors Corp	Pontiac	Oakland	2,000
General Motors Corp	Grand Blanc	Genesee	2,315
General Motors Corp/Truck Group	Flint	Genesee	2,600
Mercy Health Service	Pontiac	Oakland	2,600
General Motors Corp/Powertrain	Flint	Genesee	2,690
General Motors Corp	Flint	Genesee	2,790
Hurley Medical Center	Flint	Genesee	2,900
Chrysler Corp	Auburn Hills	Oakland	3,000
Providence Hospital	Southfield	Oakland	3,300
General Motors Corp	Flint	Genesee	3,550
Ford Motor Co	Wixom	Oakland	3,700
County of Oakland	Pontiac	Oakland	4,000
General Motors Corp	Pontiac	Oakland	4,000
General Motors Corp	Milford	Oakland	4,000
General Motors Corp	Lake Orion	Oakland	4,600
Genesys Regional Medical Center	Flint	Genesee	4,600
Delphi/Flint East	Flint	Genesee	4,800
McLaren Regional Medical Center	Flint	Genesee	5,200
General Motors Corporation	Milford	Oakland	5,700
Chrysler Corporation	Auburn Hills	Oakland	6,500
Kmart Corporation	Troy	Oakland	6,500
Chrysler Technology Center	Auburn Hills	Oakland	7,000
William Beaumont Hospital	Royal Oak & Troy	Oakland	10,000

Source: Harris Publishing Company, 1998 Industrial Directory

Table 2-8 shows the past and projected employment growth for Genesee and Oakland Counties. Oakland leads the way with about 10 percent growth expected over the next 20 years. Almost all this growth occurs between 2000 and 2010 at a rate consistent with state and national growth. Genesee County shows slower growth from 2000 to 2010, but picks up the pace relative to Oakland County in the second decade.

Table 2-8

Percent Growth in Total Employment

Area	1970 to 1980	1980 to 1990	1990 to 2000	2000 to 2010	2010 to 2020
Genesee	14.40%	3.99%	13.62%	6.54%	8.55%
Oakland	52.89%	44.20%	33.78%	9.54%	0.50%
Michigan	13.52%	19.09%	16.25%	10.54%	10.00%
U.S.	25.14%	21.84%	15.80%	11.83%	11.21%

Sources: Genesee County data from Woods & Poole Economics, Inc.
Oakland County data from 2020 Regional Development Forecase, SEMCOG, June, 1996.
U.S. and State data from Woods & Poole Economics, Inc.

Farm employment as a percent of total employment in both Genesee and Oakland Counties is much lower than the State of Michigan as a whole and also lower than the U.S. projections (Table 2-9).

Table 2-9

Farm Employment as Percent of Total Employment

Area	1970	1980	1990	2000	2005	2,010	2015	2020
Genesee	0.81%	0.75%	0.60%	0.47%	0.45%	0.42%	0.40%	0.37%
Oakland	0.39%	0.22%	0.14%	0.09%	0.08%	0.08%	0.07%	0.06%
Michigan	2.92%	2.41%	1.71%	1.27%	1.16%	1.07%	0.99%	0.92%
U.S.	4.34%	3.32%	2.26%	1.76%	1.62%	1.50%	1.38%	1.28%

Source: Woods & Poole Economics, Inc.

2.2.5 Retail Sales

Retail sales (Table 2-10) are expected to increase slower than the U.S. average in Genesee County while retail sales in Oakland County are expected to mirror the U.S. average. Nationally, retail sales are expected to increase by approximately 39 percent over the next 20 years. The projection for Genesee County shows only a 19 percent increase and Oakland shows a 39 percent increase.

Table 2-10

Total Retail Sales (in Millions of 1992 dollars)

	1970	1980	1990	2000	2005	2,010	2015	2020
Genesee	$3,046	$3,442	$3,665	$4,011	$4,108	$4,290	$ 4,520	$ 4,776
Oakland	$7,132	$9,510	$12,077	$ 14,501	$15,479	$16,810	$18,387	$20,132
Michigan	$57,396	$63,956	$72,813	$84,283	$88,528	$ 94,712	$102,159	$110,405
U.S.	$1,272,204	1,636,704	$1,925,983	$2,295,812	$2,450,773	$ 2,661,654	$ 2,911,382	$3,187,768

Source: Woods & Poole Economics, Inc.

2.3 Roads and System Linkage

The M-15 study area runs approximately 20 miles (32 km) from I-75 to I-69. M-15 is a north-south road that starts at U.S. 24 in Clarkston, Michigan and ends at M-25 in Bay City, Michigan. I-75 is generally described as a north-south route that starts in southeast Florida and ends in Sault Ste. Marie, Michigan at the Canadian border. I-69 is also generally described as a north-south road that starts in Indianapolis, Indiana and ends in Port Huron, Michigan at the Canadian border. Where I-69 and I-75 meet M-15, they run in an east-west alignment.

No other state or federal routes connect with M-15 in the project area. The closest parallel state or federal roads are M-24, which is approximately 10 miles (16 km) to the east and M-54 which is approximately 7 miles (11.5 km) to the west. M-15 is not part of the National Highway System, but it is part of the Federal Aid Highway System.

2.4 Transportation Demand and Capacity

In 1998 traffic counts on M-15 varied from a high of 27,300 vehicles per day (vpd) north of I-75 to 10,100 vpd near Goodrich. Most of Oakland County had traffic counts that were over 17,000 vpd (refer to Figure 1-2). In Genesee County no 1998 counts were over 12,600 vpd. Future travel demand has been simulated using MDOT's statewide travel model for 2020 with additional growth added to bring the projections up to 2025. These projections of M-15 traffic for 2025 range from 35,800 vpd north of I-75 to 14,000 vpd north of Goodrich. M-15 through most of Oakland County is projected to have over 21,000 vpd in 2025. There are also several locations in Genesee County that are predicted to have over 17,000 vpd, including the I-69 interchange area and the area around Goodrich. These data will continue to be reviewed based on SEMCOG's model and project-specific adjustments.

Two-lane roads in urban settings can carry 17,000 vpd, as travel demand is generally spread throughout the day and night and vehicles are not pressing to pass. However, in rural areas, where longer distance travel prevails, autos want to pass trucks and other cars. As traffic volumes increase, fewer and fewer sufficient gaps are presented for safe passing. The result is lower roadway capacity as traffic flow is controlled by the slowest moving vehicles. Under these conditions, and at volumes of 17,000 vpd or more, four-lane roads of some type are preferred.

2.5 Federal, State and/or Local Governmental Mandate

The most recent federal legislation relating to transportation is the Transportation Equity Act for the 21st Century (TEA21). M-15 is listed as a "high priority project" in Section 1602 of TEA21. TEA21 provided $500,000 in funding for operational improvements on M-15 from I-75 north to the Genesee County line.

The Village of Goodrich in its State Road/M-15 Corridor Plan dated April 1999 stated that additional work is necessary to improve access management along the corridor. Brandon Township and the Village of Ortonville have requested that capacity and other operational improvements be made to M-15.

2.6 Social Demands/Economic Development

The study area is expected to see a high level of population growth in the future. Oakland is one of the fastest growing counties in Michigan. From 1980 to 1990 its population grew almost seven percent while the State of Michigan only grew 0.36 percent. The Southeastern Michigan Council of Governments (SEMCOG) projects that the townships surrounding the Oakland County portion of the corridor will be urbanized by the year 2010.[1] Brandon Township grew from 9,526 to 12,051 (26.5%) from 1980 to 1990. Independence Township grew from 21,537 to 24,722 (14.8%) from 1980 to 1990. The areas around the portion of the M-15 corridor in Genesee County are also growing. Davison Township grew from 13,708 to 14,671 (7.0%) from 1980 to 1990. The Village of Goodrich grew from 795 to 916 (15.2%) in the same 10-year period. These factors indicate the need to study improving highway capacity in the corridor.

2.7 Safety and Roadway Deficiencies

Safety has always been an important issue in the corridor. Both Ortonville (45 mph) and Goodrich (40 mph) have speed restrictions. Horizontal and vertical curve sections also limit overall travel speed. Sight distance limitations, congested intersections and frequent driveway entrances contribute to "friction" and potential conflicts along the roadway. As congestion increases there are fewer chances to pass slower vehicles, which then set overall travel speeds. Furthermore, MDOT's Sufficiency Report indicates nearly four miles of the rural segment of M-15 has sight restrictions which prohibit passing. If the segments through Ortonville and Goodrich are eliminated from this inventory (2.19 miles), nearly four of the 18 miles of M-15 (22%) have passing sight restrictions. This is one factor that contributes to the safety and capacity deficiencies of this road.

Roadway Deficiencies

Road resurfacing was completed in Genesee County in 1999 and is currently underway on M-15 in Oakland County. Previously, many areas of the roadway were rated poor in terms of base and drainage conditions.

MDOT's 1995 M-15 report called for a major reconstruction of M-15, some widening, vertical alignment improvement, improved drainage and ditching, roadside control islands and tree cutting and trimming. It also stated that there was a need for bridge repair, improvement to slopes and sight distances.

Crash History

MDOT's 1995 report on M-15 included a safety analysis of the corridor. It concluded that the existing accident experience is indicative of a roadway with capacity and turning movement deficiencies. Safety analysis covered Oakland and Genesee counties separately over a five-year period, January 1, 1989 to December 31, 1993.

In the Genesee County part of the corridor there were 581 crashes over 9.8 miles (15.8 km) (Table 2-11). Of these, 188 resulted in 292 injuries and one fatality. The fatality was the result of a driver crossing the centerline and hitting a tree. The following table lists the number of crashes by type, with the most frequent being "rear-end."

Table 2-11
Genesee County Crash Data (1989-1993)

Type of crash	Frequency	Percent
Rear-end	156	26
Animal	126	22
Angle	85	15
Fixed-object	82	14
Head-on	31	5
Sideswipe	18	3
Rear-end left-turn	16	3
Overturn	15	3
Head-on left-turn	11	2
Driveway related	8	1
Other	33	6
Total	581	100

Source: Michigan Department of Transportation.

More recent accident information for Genesee County has been provided by the Traffic Improvement Association of Oakland County. In 1996 and 1997 there were 201 crashes (Table 2-11b). The two most frequent type of crashes were animal (24%) and rear-end (19%).

Table 2-11b
Genesee County Crash Data (1996-1997)

Type of crash	Frequency	Percent
Animal	49	24
Rear-end	38	19
Angle	36	18
Sideswipe	16	8
Fixed-object	12	6
Head-on left turn	10	5
Rear-end left-turn	9	5
Run Off Road	6	3
Head-on	5	2
Other	20	10
Other	33	6
Total	201	100

Source: Traffic Improvement Association of Oakland County..

In the Oakland County part of the corridor there were 943 crashes over 9.7 miles (15.6 km) (Table 2-12); 298 resulted in 470 injuries and seven fatalities. Four of the fatalities occurred in three separate crashes where a vehicle crossed the centerline and hit another vehicle head-on. The most common crash type (37%) was rear-end. Rear-end crashes generally occur in congested conditions when drivers follow the car in front of them too closely.

Table 2-12
Oakland County Crash Data (1989-1993)

Type of crash	Frequency	Percent
Rear-end	355	37
Angle	167	18
Animal	96	10
Fixed-object	81	9
Head-on	57	6
Head-on left-turn	28	3
Overturn	25	3
Rear-end left-turn	22	2
Other	112	12
Total	943	100

Source: Michigan Department of Transportation.

Recent accident information for Oakland County indicated there were 660 crashes for M-15, north of I-75, in Oakland County between 1996 and 1998 (Table 2-12b). The most common crash type remained rear-end with 45 percent of the crashes.

Table 2-12b
Oakland County Crash Data (1996-1998)

Type of crash	Frequency	Percent
Rear-end	300	45
Angle	92	14
Animal	78	12
Sideswipe	42	7
Fixed-object	34	5
Head-on left turn	23	3
Head-on	16	2
Rear-end left-turn	13	2
Run off Road	13	2
Overturn	10	2
Other	39	6
Total	660	100

Source: Traffic Improvement Association of Oakland County..

More recent accident information for Genesee County indicates there were 201 accidents from the Oakland County line north to Maple Road in 1996 and 1997. The link on M-15 that had the highest rate of accidents was from East Hegel Road to Coolidge Road (1 mile) with 48 accidents per mile. The next highest link was from Green Road to East Hegel Road (1 mile) with 47 accidents per mile. Intersecting crossroads (200 feet or closer to the intersection) with the highest number of accidents were Hill Road and Atherton Road with eight accidents each.

Recent accident information for M-15 in Oakland County indicates there was an average of 220 accidents per year on links and at intersections for the years 1996 to 1998. The link on M-15 that had the highest number of accidents per mile was from Grange Hall Road to Groveland Road (0.66 miles), with nearly 26 accidents per mile. The next highest link was from I-75 to Rattalee Lake (2 miles), which had 25.5 accidents per mile. The intersection that had the highest frequency of accidents was M-15 at Glass Road. There was an average of 19 accidents a year at this intersection.

The above data are still being refined and will likely be updated in the future.